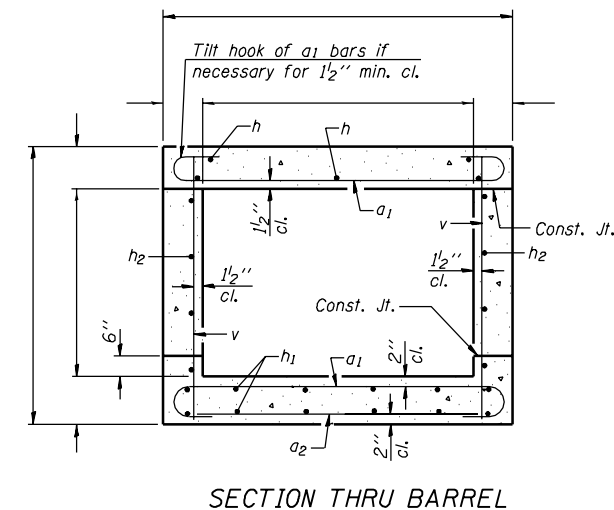
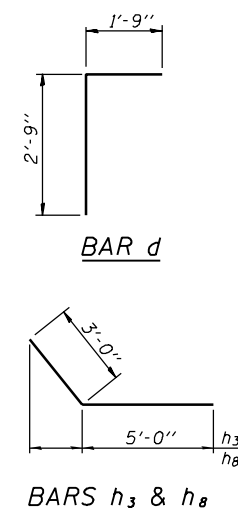


CELL / MODEL NAME	DESCRIPTION	DATE
SSB-H-L	Plan and Elevation ahead left with horizontal cantilever wingwalls	10/22/2004
SSB-H-O	Plan and Elevation no skew with horizontal cantilever wingwalls	10/22/2004
SSB-H-R	Plan and Elevation ahead right with horizontal cantilever wingwalls	10/22/2004
SSB-L-L	Plan and Elevation ahead left with L type wingwalls	10/22/2004
SSB-L-O	Plan and Elevation no skew with L type wingwalls	10/22/2004
SSB-L-R	Plan and Elevation ahead right with L type wingwalls	10/22/2004
SSB-T1-L	Plan and Elevation ahead left with T type wingwalls (H<8 ft)	10/22/2004
SSB-T1-O	Plan and Elevation no skew with T type wingwalls (H<8 ft)	10/22/2004
SSB-T1-R	Plan and Elevation ahead right with T type wingwalls (H<8 ft)	10/22/2004
SSB-T2-L	Plan and Elevation ahead left with T type wingwalls (H>8 ft)	10/22/2004
SSB-T2-O	Plan and Elevation no skew with T type wingwalls (H>8 ft)	10/22/2004
SSB-T2-R	Plan and Elevation ahead right with T type wingwalls (H>8 ft)	10/22/2004

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	-	-		
FED. ROAD DIST. NO. 7			ILLINOIS	FED. AID PROJECT-

SHEET NO. -
- SHEETS

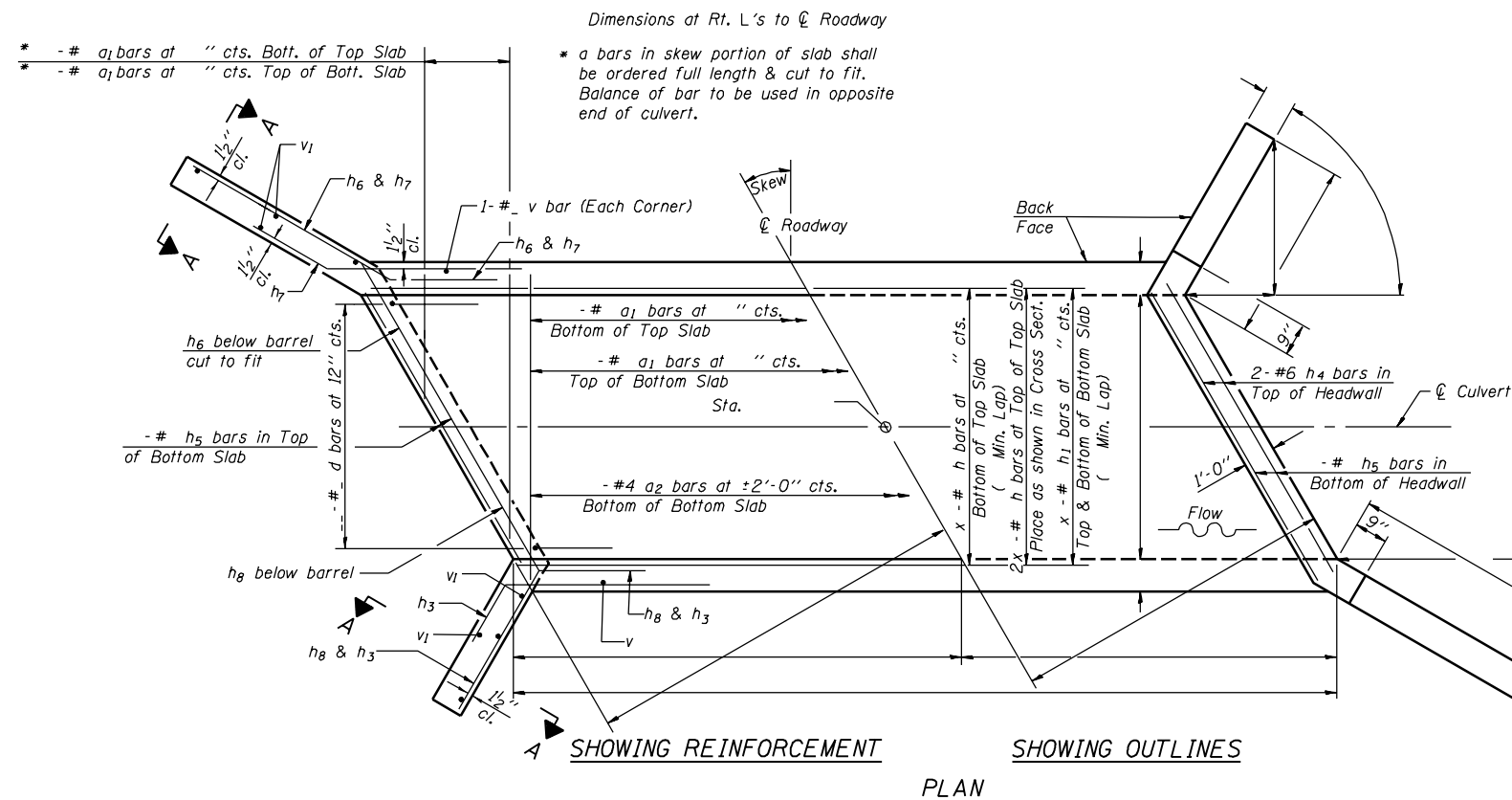
SHEET NO. -
- SHEETS



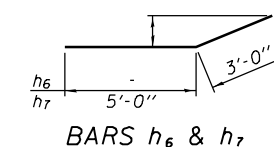
SECTION THRU BARREL

BILL OF MATERIAL

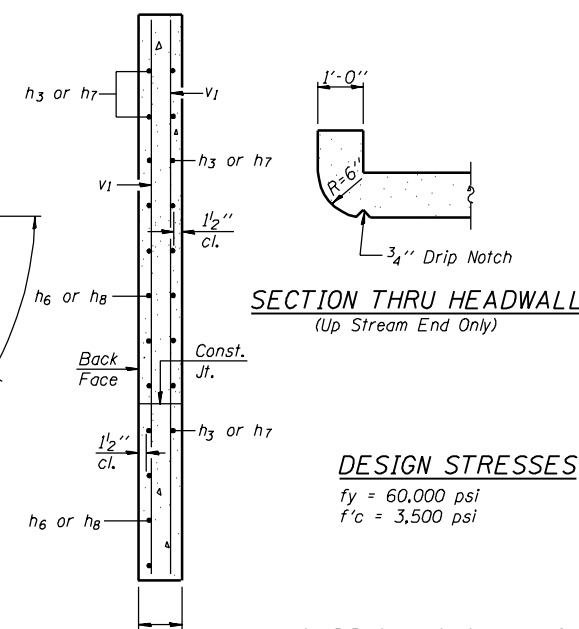
<i>Bar</i>	<i>No.</i>	<i>Size</i>	<i>Length</i>	<i>Shape</i>
a ₁				
a ₂		#4		
d		#4	4'-6"	
h				
h ₁				
h ₂				
h ₃			8'-0"	
h ₄		#6		
h ₅				
h ₆				
h ₇			8'-0"	
h ₈				
v				
v ₁		#4		
<i>Concrete Box Culverts</i>			<i>Cu. Yd.</i>	
<i>Reinforcement Bars</i>			<i>Pound</i>	



BAR a_i



BARS h_6 & h_7



SECTION THRU HEADWALL
(Up Stream End Only)

DESIGN STRESSES

$$\begin{aligned} f_y &= 60,000 \text{ psi} \\ f'_c &= 3,500 \text{ psi} \end{aligned}$$

SECTION A-A

LOADING HS 20-44 & ALT.

DESIGNED -	-	200
CHECKED -	EXAMINED	ENGINEER OF BRIDGE DESIGN
DRAWN -	PASSED	ENGINEER OF BRIDGES AND STRUCTURES
CHECKED -		

NOTES

A distance of half the length of the wingwall but not less than six feet of the barrel shall be poured monolithically with the wingwalls.

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.

Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.

All construction joints shall be bonded.

SSB-H-L 10-22-04

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	-	-		
-	-	-		
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SHEET NO. -

- SHEETS

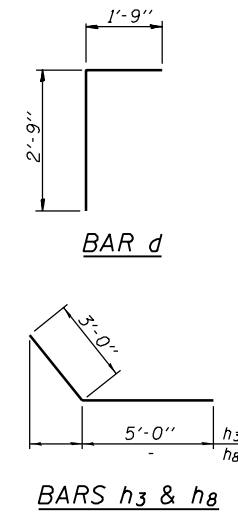
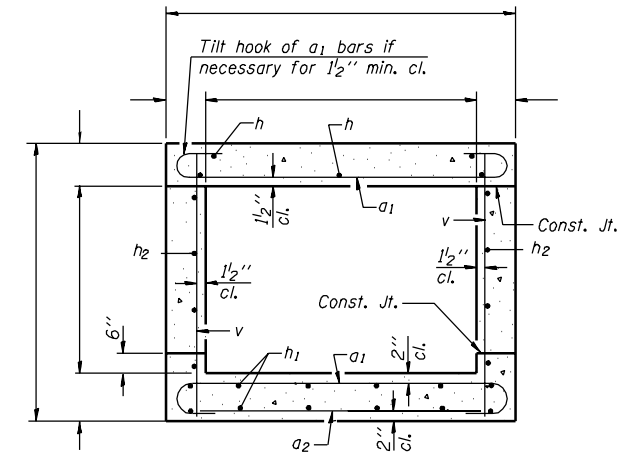
<i>Bar</i>	<i>No.</i>	<i>Size</i>	<i>Length</i>	<i>Shape</i>
a ₁				
a ₂		#4		
d		#4	4'-6"	
h				
h ₁				
h ₂				
h ₃			8'-0"	
h ₄		#6		
h ₈				
v				
v ₁		#4		
<i>Concrete Box Culverts Reinforcement Bars</i>			<i>Cu. Yd. Pound</i>	

SSB-H-0 10-22-04

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	-	-	-	-
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SHEET NO. -
 - SHEETS

HALF ELEVATION

BARS h_3 & h_8 

SECTION THRU BARREL

Dimensions at Rt. L's to ∇ Roadway

* a bars in skew portion of slab shall be ordered full length & cut to fit. Balance of bar to be used in opposite end of culvert.

∇ Roadway

Back Face

Skew

Flow

∇ Culvert

Back Face

$\frac{1}{2}$ " cl.

SHOWING REINFORCEMENT

SHOWING OUTLINES

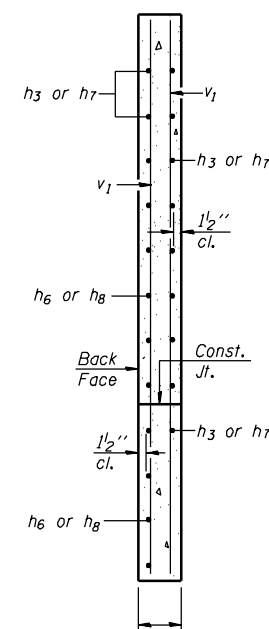
PLAN

SHOWING OUTLINES

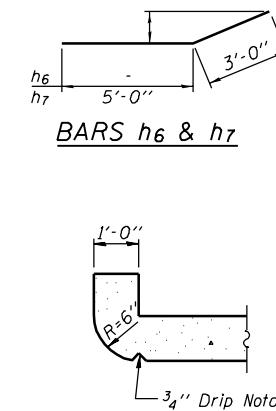
NOTES

DESIGNED -	-	200
CHECKED -	EXAMINED	ENGINEER OF BRIDGE DESIGN
DRAWN -	PASSED	ENGINEER OF BRIDGES AND STRUCTURES
CHECKED -		

10-22-04



SECTION A - A



SECTION THRU HEADWALL
(Up Stream End Only)

$$\begin{aligned} f_y &= 60,000 \text{ psi} \\ f'_c &= 3,500 \text{ psi} \end{aligned}$$

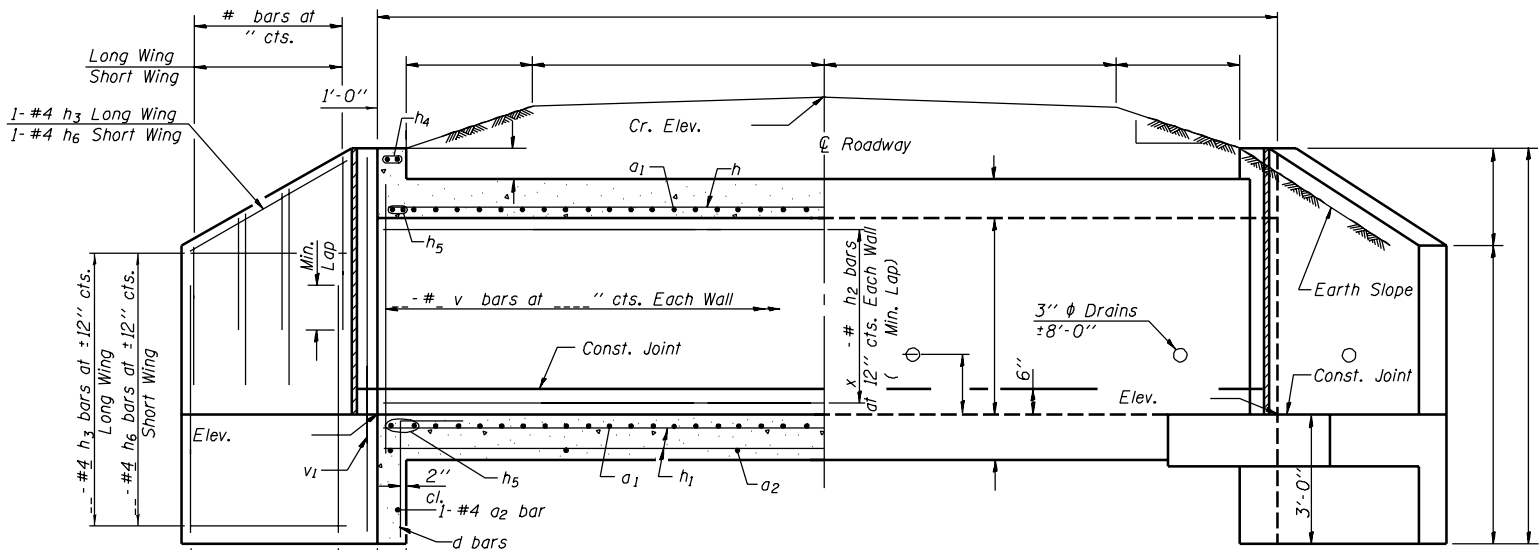
LOADING HS 20-44 & ALT.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	10% SHEETS	SHEET NO.
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. -
- SHEETS

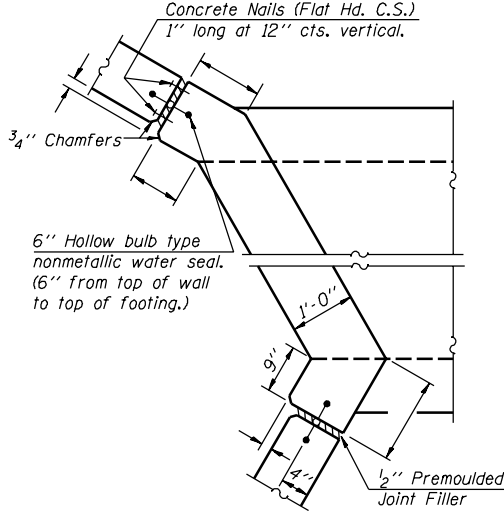
Contract #



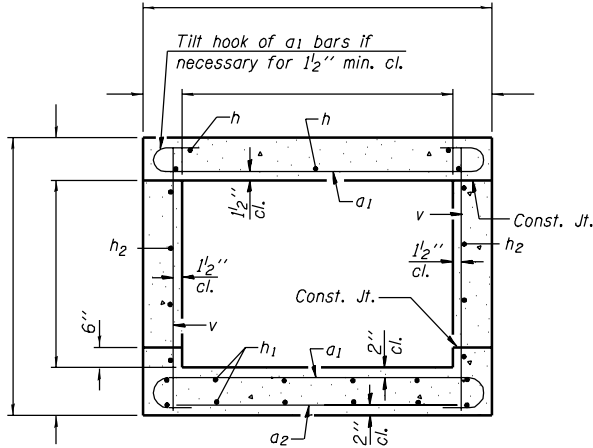
HALF LONG. SECT.

HALF ELEVATION

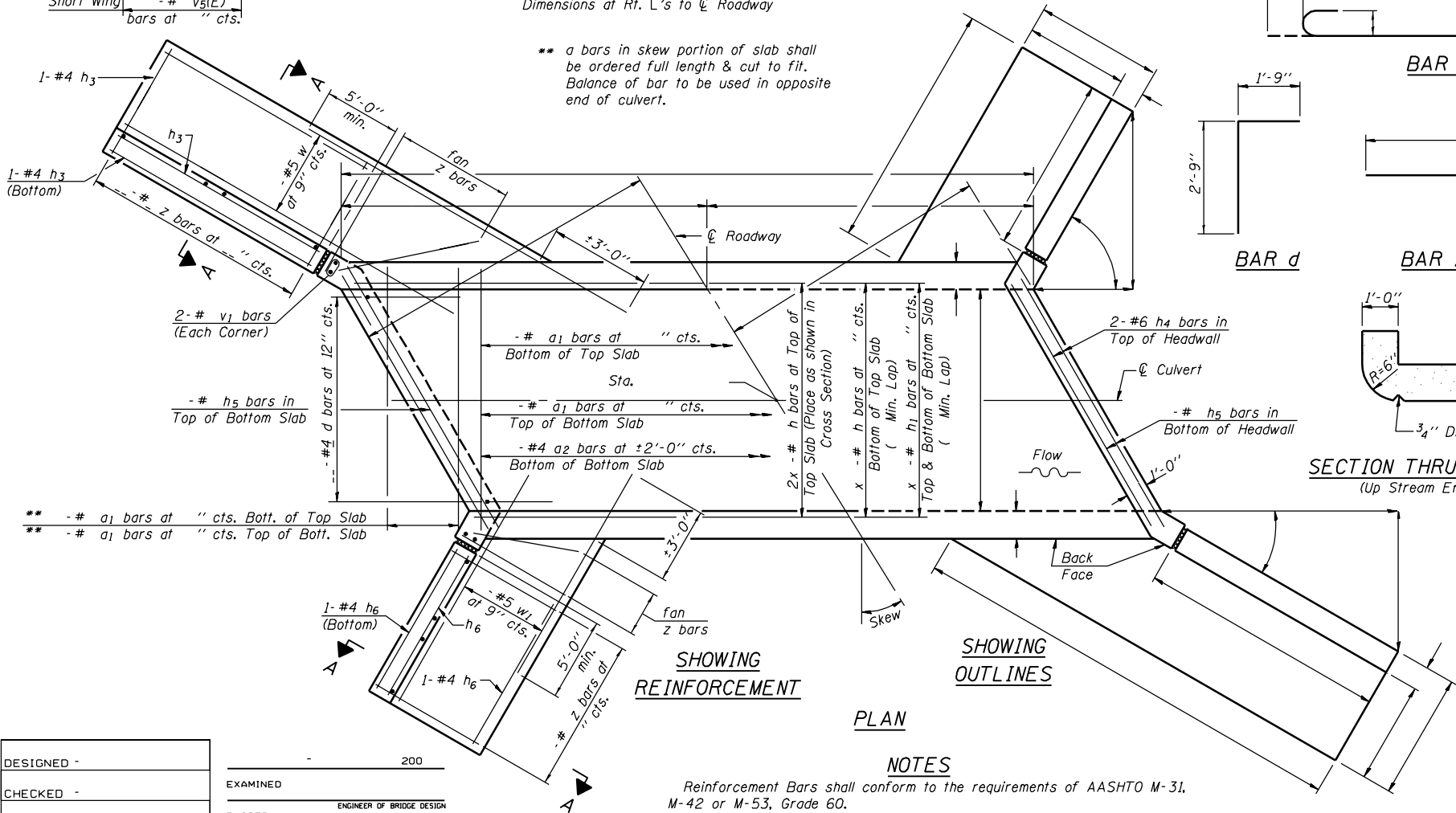
Dimensions at Rt. L's to \odot Roadway



CORNER DETAIL



SECTION THRU BARREL



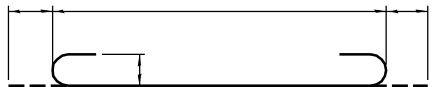
SHOWING
REINFORCEMENT

SHOWING
OUTLINES

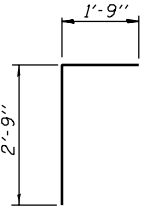
PLAN

NOTES

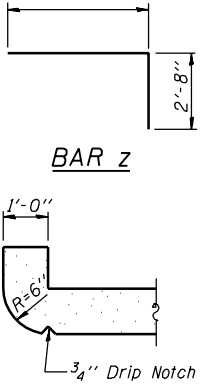
Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.
Reinforcement bars designated (E) shall be epoxy coated.
All construction joints shall be bonded.



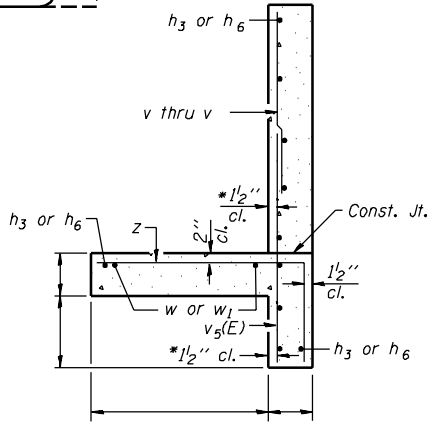
BAR a1



BAR d



BAR z



SECTION A-A

* v bars shall not be placed more than 1/2" cl. from back face of wingwall.

DESIGN STRESSES

$f_y = 60,000$ psi
 $f'_c = 3,500$ psi

Max. Soil Pressure
under footing = psf

LOADING HS 20-44 & ALT.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1				
a2		#4		
d		#4	4'-6"	
h				
h1				
h2				
h3		#4		
h4		#6		
h5				
h6		#4		
v				
v1				
v2				
v3				
v4				
v5(E)				
w		#5		
w1		#5		
z				
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars, Epoxy Coated			Pound	
Reinforcement Bars			Pound	

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

SSB-L-L

10-22-04

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	-	-		
-				
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SHEET NO. -

- SHEETS

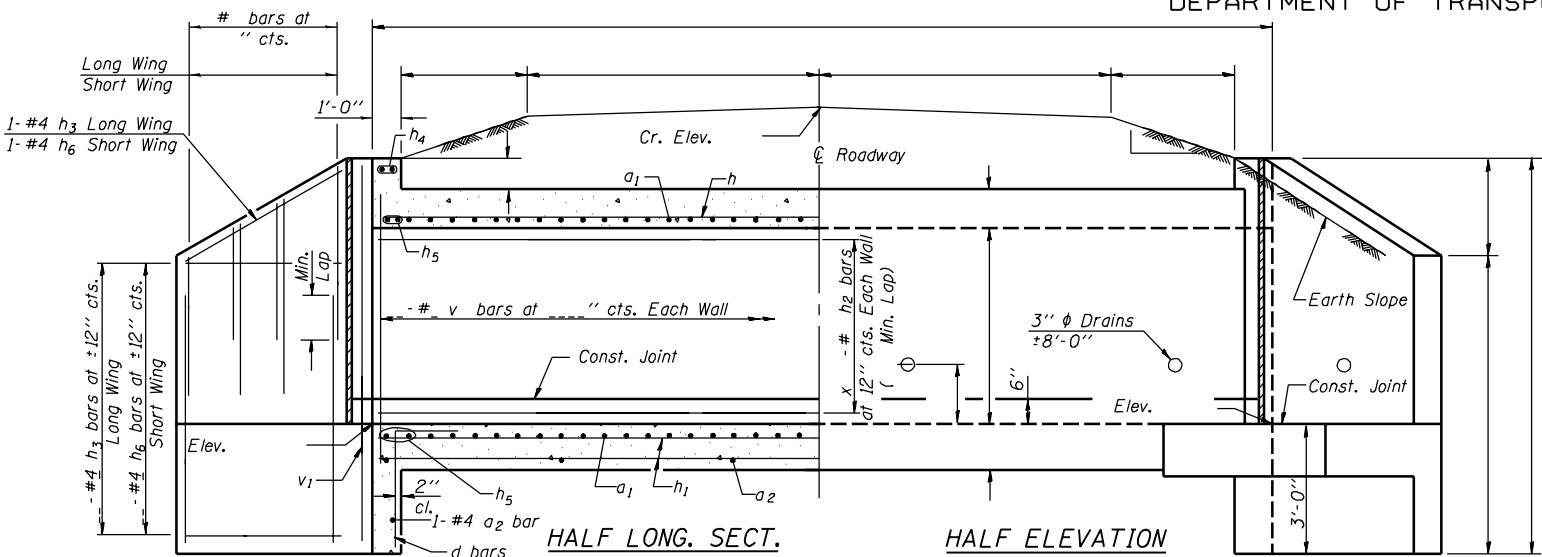
SSB-L-0 10-22-04

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. -
SHEETS

Contract #

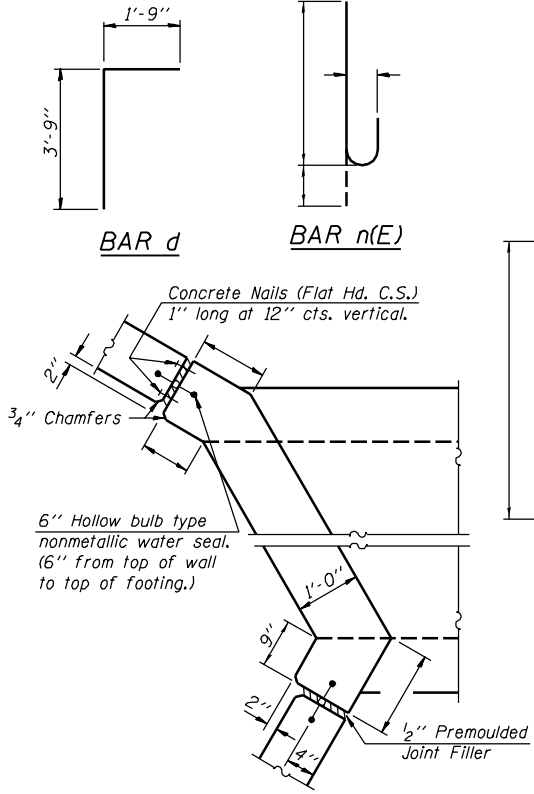
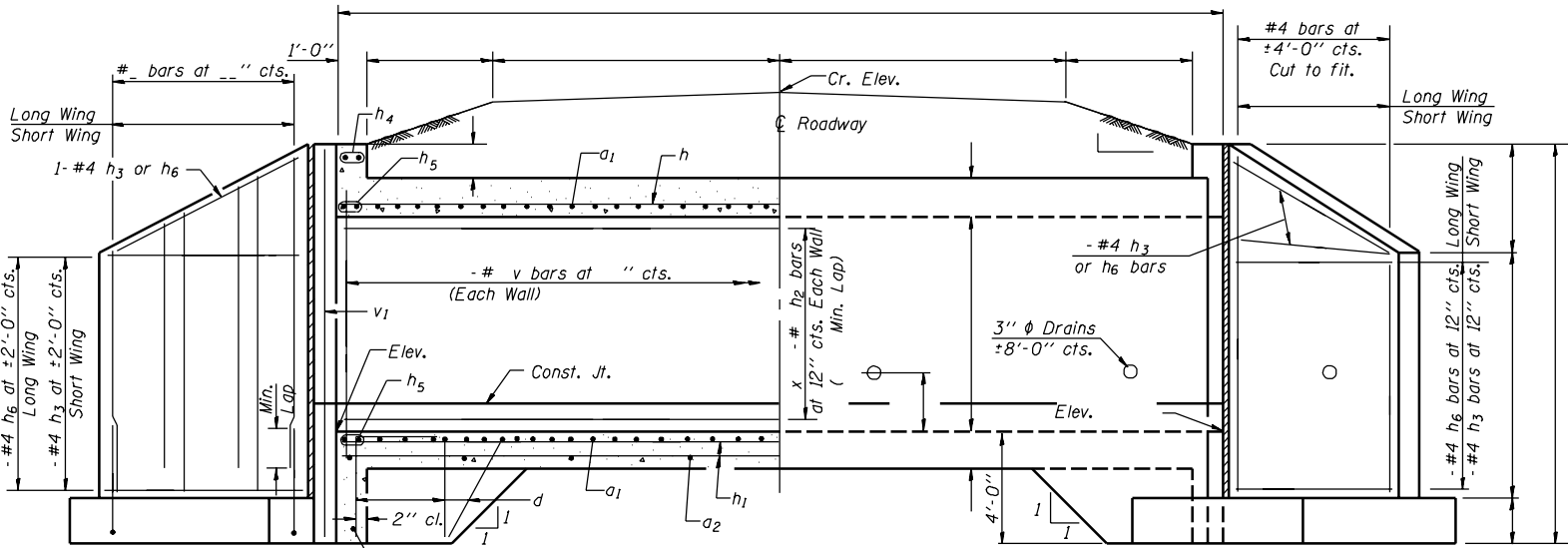


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. -
- SHEETS

Contract #



SECTION THRU BARREL

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1				
a2		#4		
d		#4	5'-6"	
h				
h1				
h2				
h3		#4		
h4		#6		
h5				
h6		#4		
n(E)				
t				
v				
v1				
v2				
v3				
v4				
w		#5		
w1		#5		
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars, Epoxy Coated			Pound	
Reinforcement Bars			Pound	

HALF LONG. SECTION

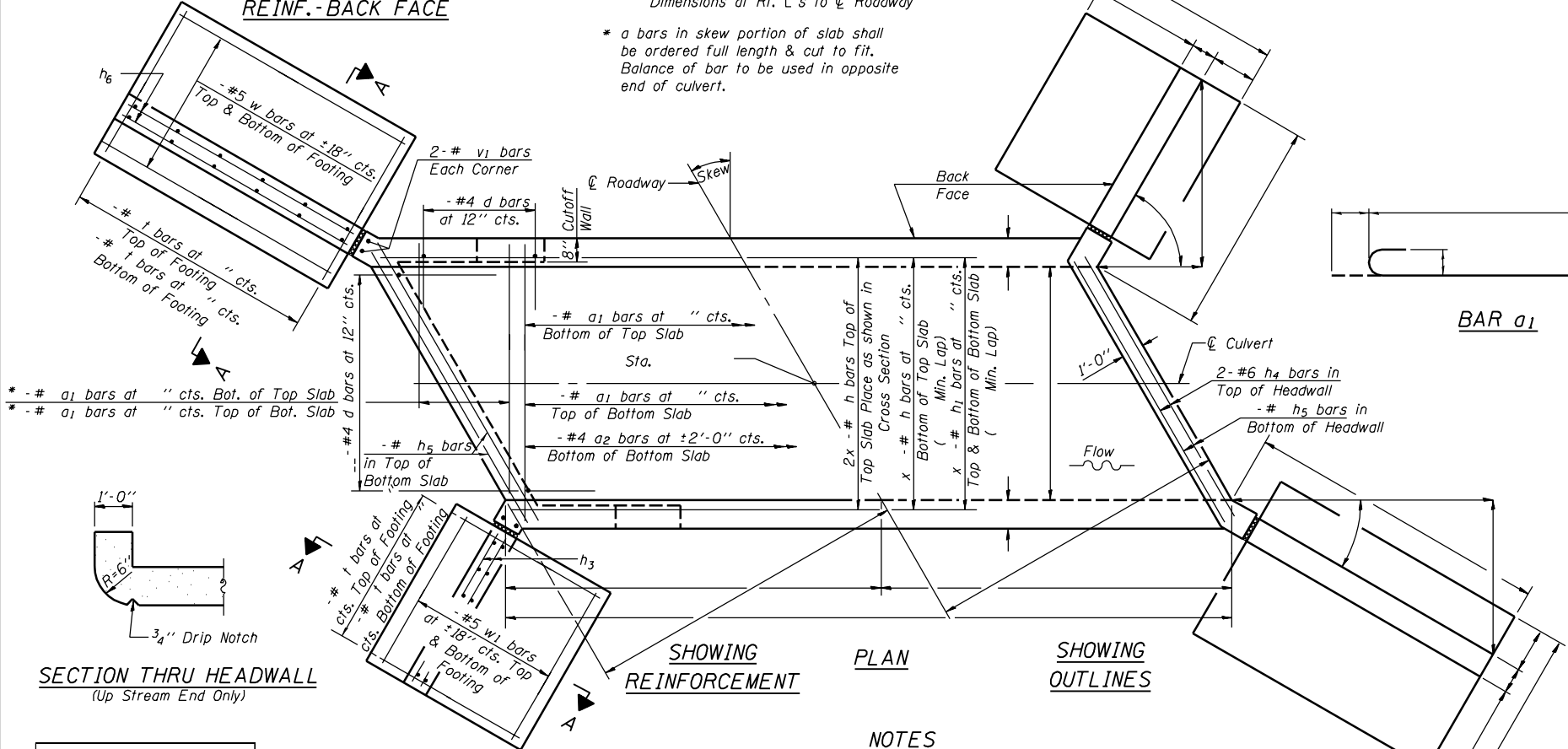
HALF ELEVATION

REINF.-FRONT FACE

REINF.-BACK FACE

Dimensions at Rt. L's to C Roadway

* a bars in skew portion of slab shall be ordered full length & cut to fit. Balance of bar to be used in opposite end of culvert.



SECTION THRU HEADWALL
(Up Stream End Only)

SHOWING REINFORCEMENT

PLAN

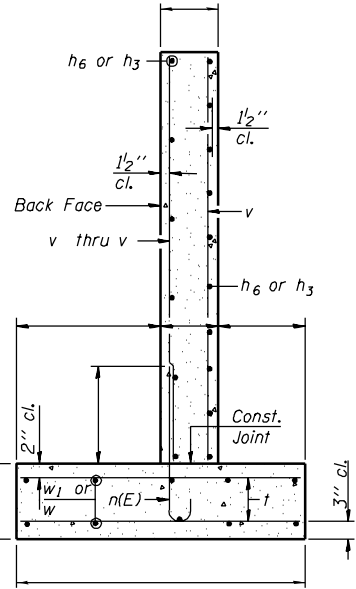
SHOWING OUTLINES

NOTES

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
Bars indicated thus 12 x 4- #5 etc. indicates 12 lines of bars with 4 lengths per line.
Reinforcement bars designated (E) shall be epoxy coated.
All construction joints shall be bonded.

CORNER DETAIL

BAR a1



SECTION A-A

DESIGN STRESSES

fy = 60,000 psi
f'c = 3,500 psi

Max. Soil Pressure
under footing = psf

LOADING HS 20-44 & ALT.

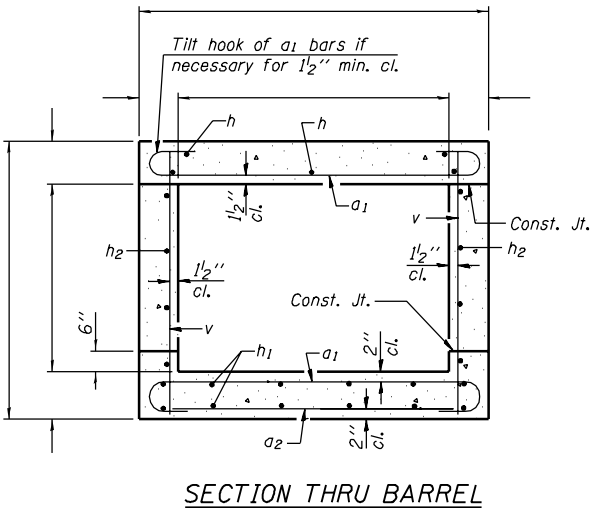
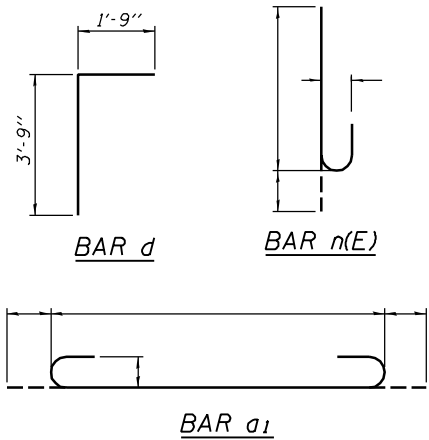
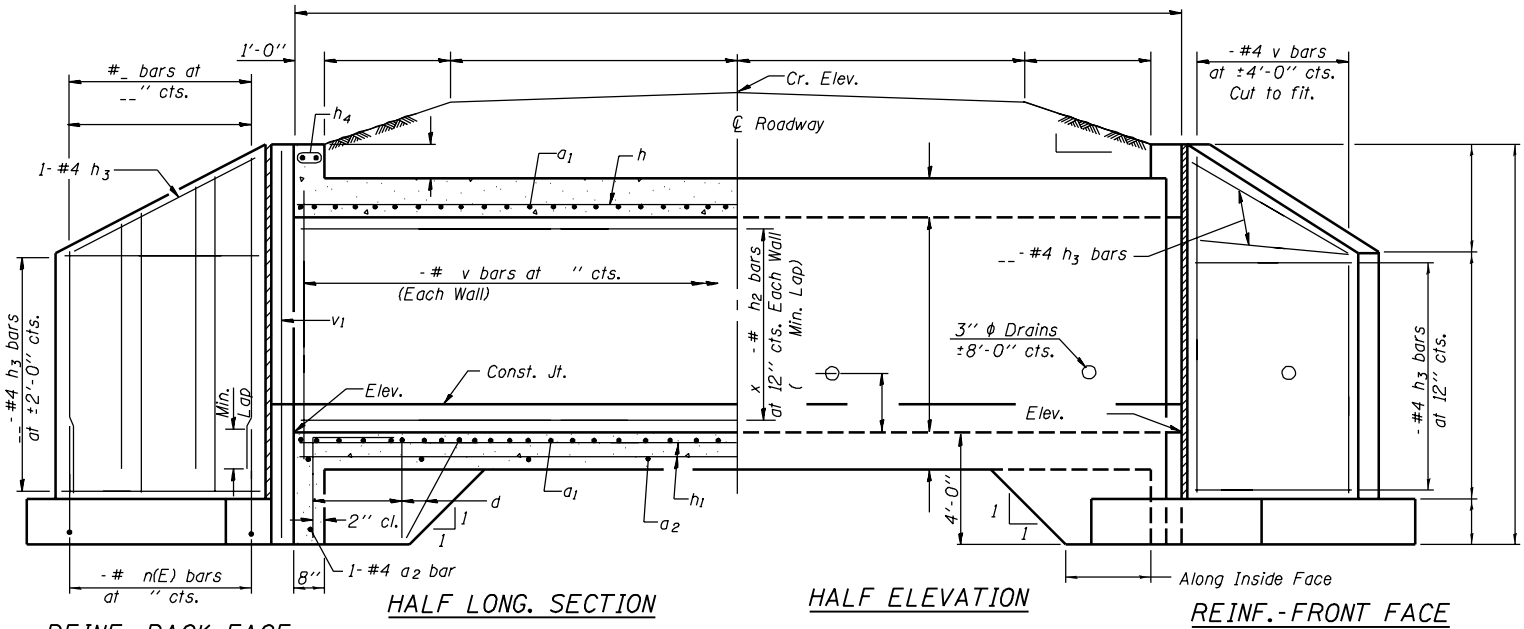
DESIGNED -	200
CHECKED -	EXAMINED
DRAWN -	ENGINEER OF BRIDGE DESIGN
CHECKED -	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	-	-	-	-
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

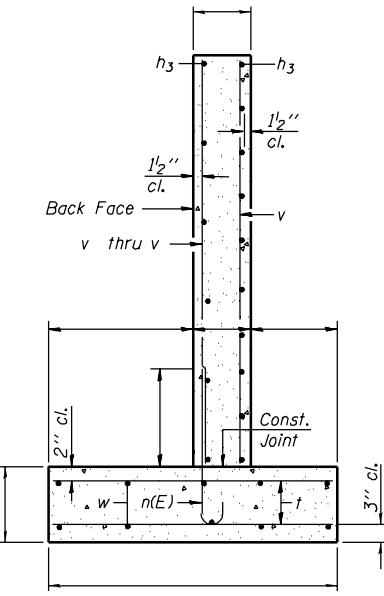
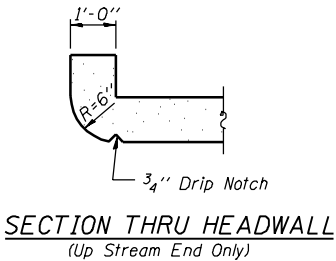
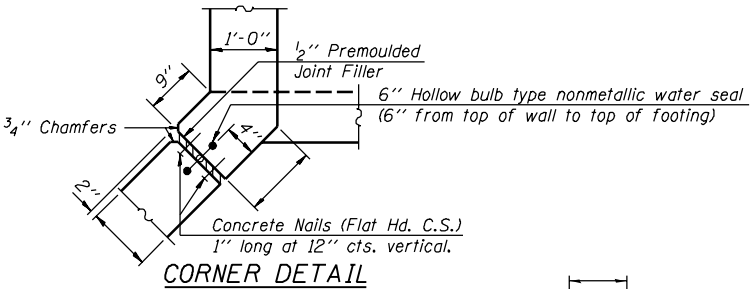
SHEET NO. -
- SHEETS

Contract #



BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1				
a2		#4		
d		#4	5'-6"	
h				
h1				
h2				
h3		#4		
h4		#6		
n(E)				
t				
v				
v1				
v2				
v3				
v4				
w		#5		
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars, Epoxy Coated			Pound	
Reinforcement Bars			Pound	

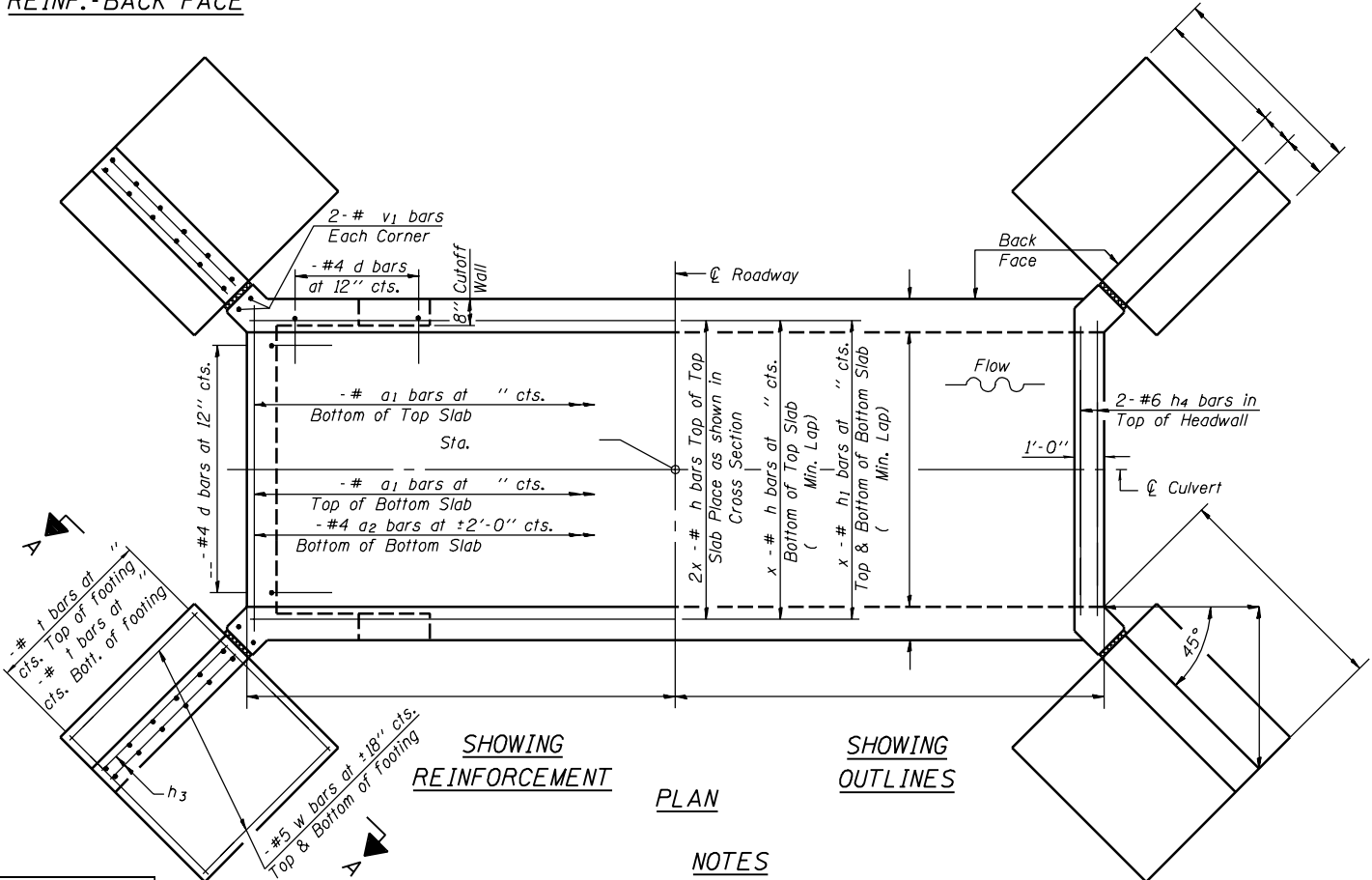


DESIGN STRESSES

$f_y = 60,000 \text{ psi}$
 $f'_c = 3,500 \text{ psi}$

Max. Soil Pressure
under footing = psf

LOADING HS 20-44 & ALT.



NOTES

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.
Reinforcement bars designated (E) shall be epoxy coated.
All construction joints shall be bonded.

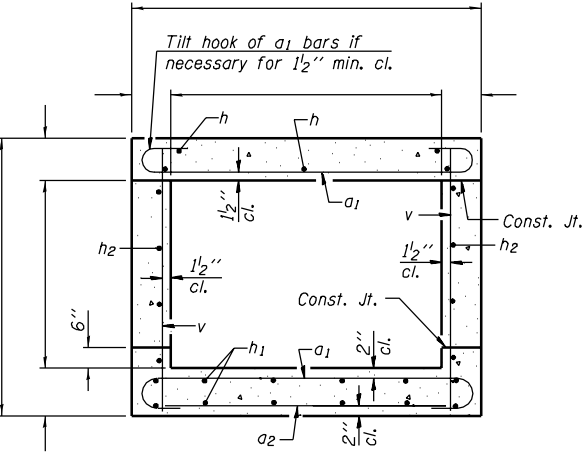
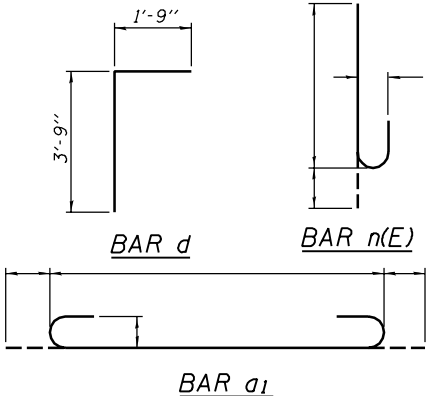
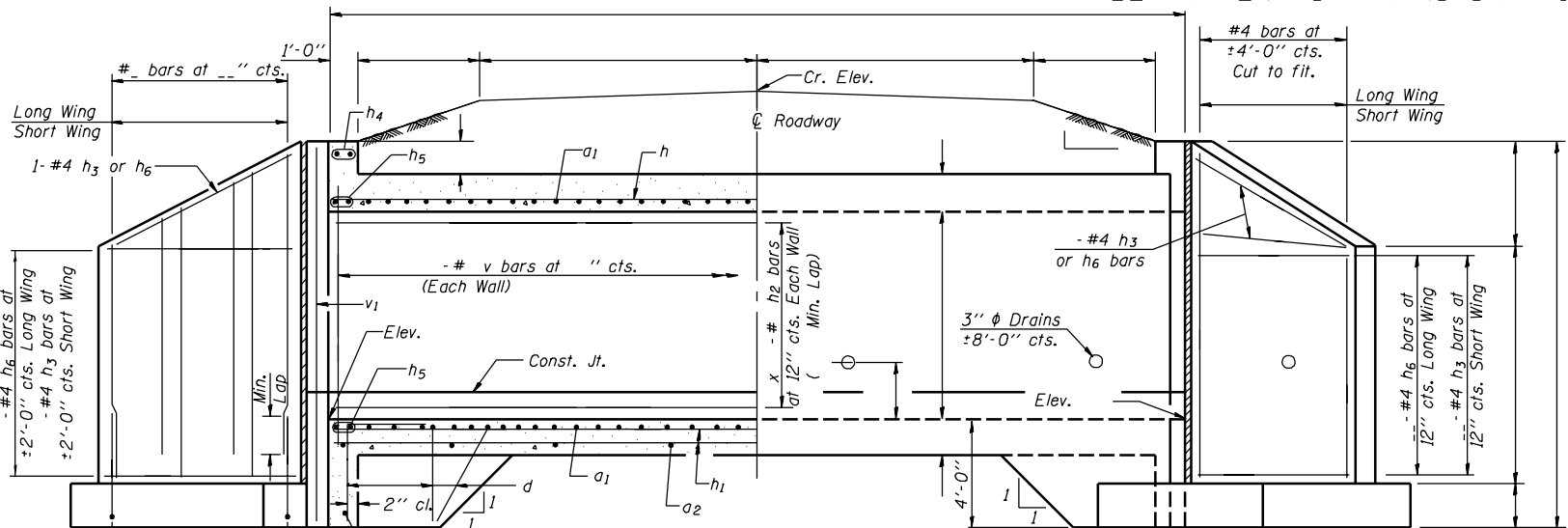
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract #



SECTION THRU BARREL

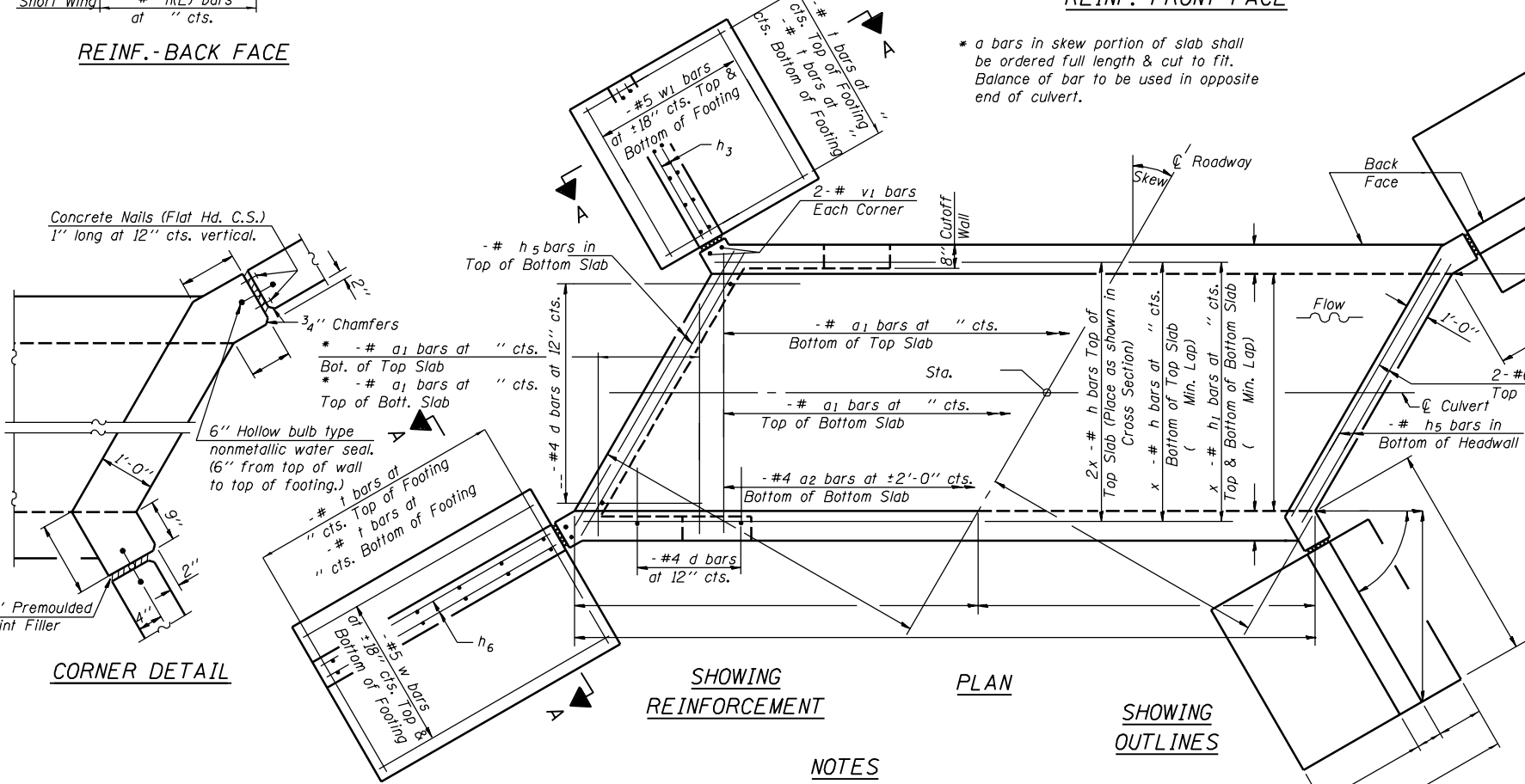
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1				
a2	#4			
d	#4	5'-6"		
h				
h1				
h2				
h3	#4			
h4	#6			
h5				
h6	#4			
n(E)				
t				
v				
v1				
v2				
v3				
v4				
w	#5			
w1	#5			
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars, Epoxy Coated			Pound	
Reinforcement Bars			Pound	

REINF.-BACK FACE

REINF.-FRONT FACE

* a bars in skew portion of slab shall be ordered full length & cut to fit. Balance of bar to be used in opposite end of culvert.



SHOWING REINFORCEMENT

PLAN

SHOWING OUTLINES

NOTES

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.
Reinforcement bars designated (E) shall be epoxy coated.
All construction joints shall be bonded.

SECTION A-A

SECTION THRU HEADWALL
(Up Stream End Only)

DESIGN STRESSES

$f_y = 60,000 \text{ psi}$
 $f'_c = 3,500 \text{ psi}$

Max. Soil Pressure under footing = psf

LOADING HS 20-44 & ALT.

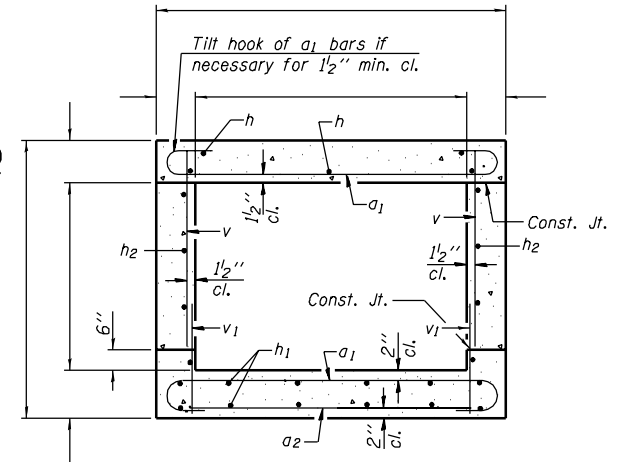
DESIGNED -	200
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES
























ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	-	-		
-	-	-		
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SHEET NO. -

- SHEETS

Tilt hook of a_1 bars if
necessary for $1\frac{1}{2}''$ min. cl.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a_1				
a_2		#4		
d		#4	5'-6"	
h				
h_1				
h_2				
h_3		#4		
h_4		#6		
h_5				
h_6		#4		
$n(E)$				
$n_1(E)$				
t				
v				
v_1				
v_2				
v_3				
v_4				
v_5				
v_6				
v_7				
w		#5		
w_1		#5		
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars, Epoxy Coated			Pound	
Reinforcement Bars			Pound	

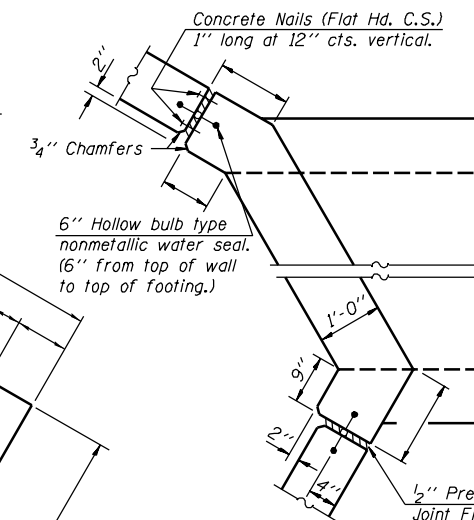


Figure 1 is a cross-sectional diagram of a precast concrete pile. The pile is composed of several sections: a top cap, a middle section, and a base. The total width of the pile is 3 inches. The top cap has a height of 2 inches and contains a vertical reinforcement bar labeled $n(E)$. Below the cap is a section of length l_2'' cl. containing a vertical reinforcement bar labeled $1/2''$ cl. The main body of the pile is a precast concrete shaft with a height of h_3 or h_6 inches, containing a vertical reinforcement bar labeled v thru v . The bottom section is a precast concrete base with a height of 3 inches, containing a vertical reinforcement bar labeled $n(E)$ or $n_1(E)$. The base is labeled "Const. Joint" and "at joint". The diagram also shows a "Back Face" and a "Filler" section.

DESIGN STRESSES

Max. Soil Pressure
under footing = psf

* a bars in skew portion of slab shall be ordered full length & cut to fit.
Balance of bar to be used in opposite end of culvert.

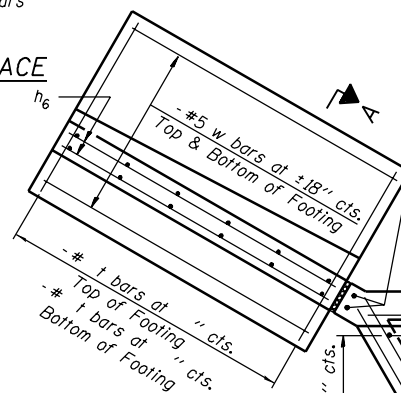


Diagram of a 90-degree elbow with dimensions: 1'-0" straight section, R=6" radius, and 3/4" Drip Notch.

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

- 200

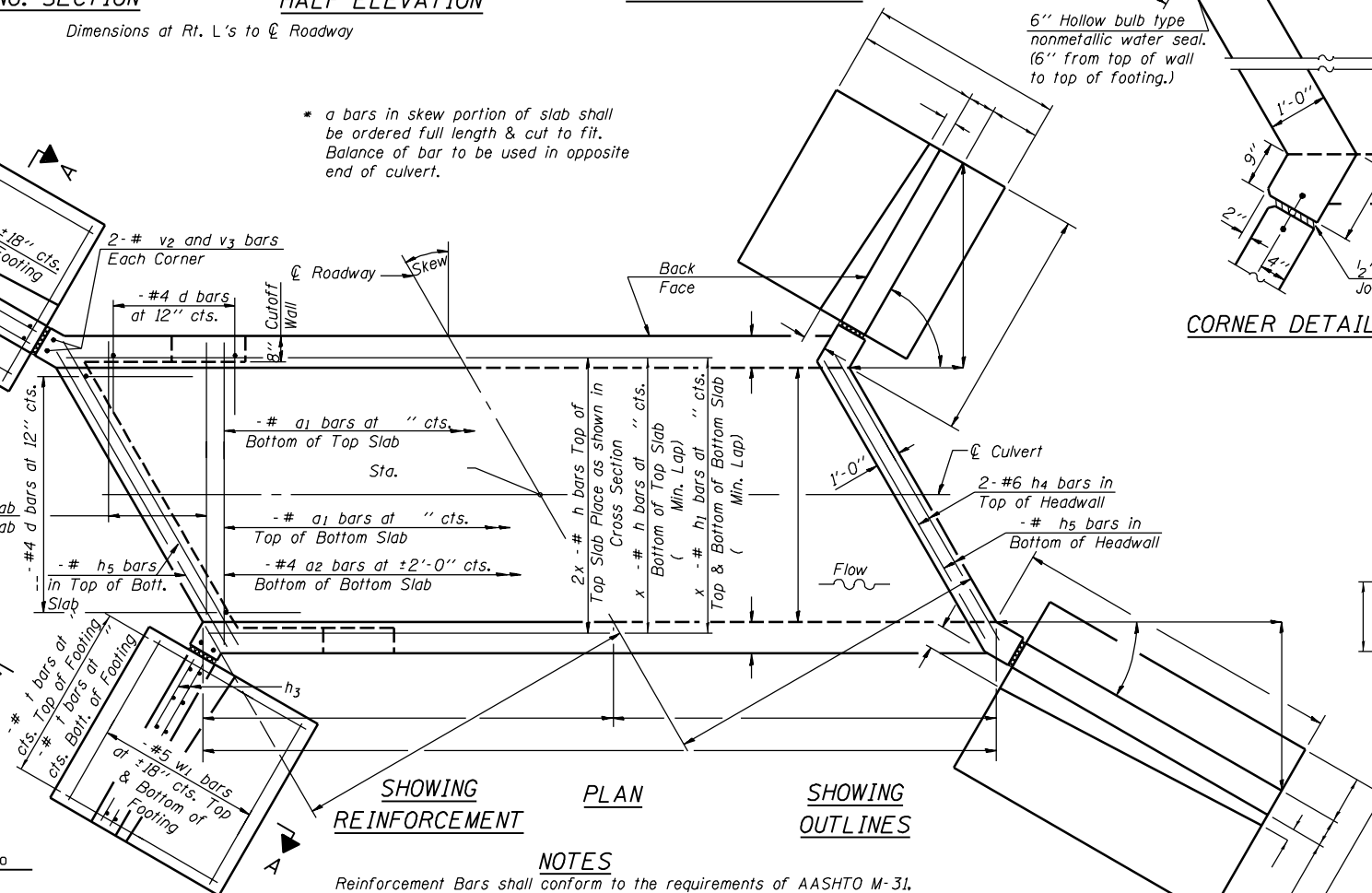
EXAMINED

PASSED

ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES

10-22-04



SHOWING
REINFORCEMENT

PLAN

SHOWING OUTLINES

NOTES

Reinforcement bars designated (E) shall be epoxy coated.
All construction joints shall be bonded.

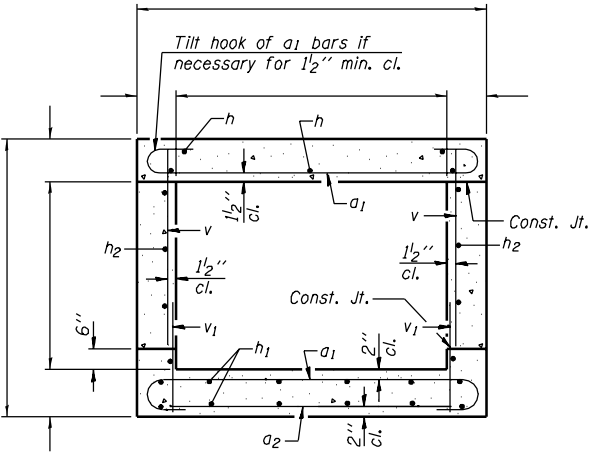
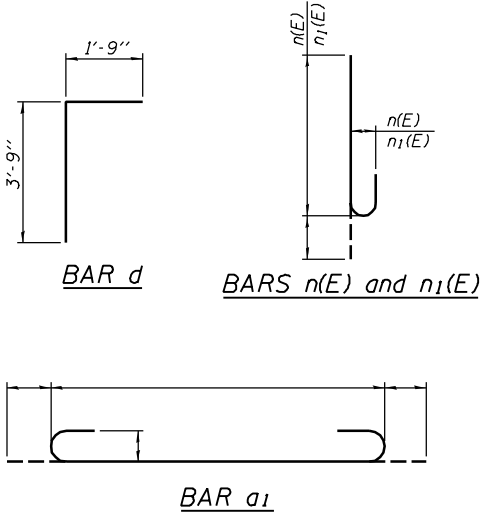
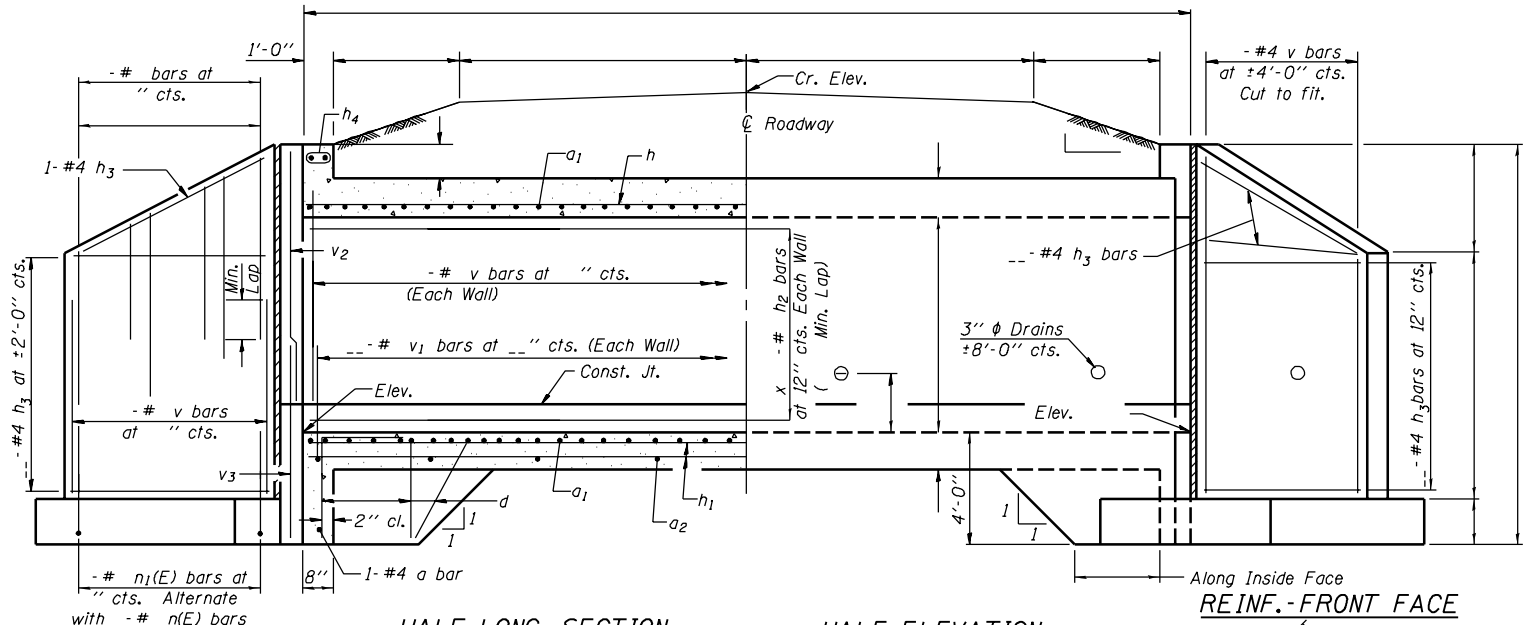
200

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. -
- SHEETS

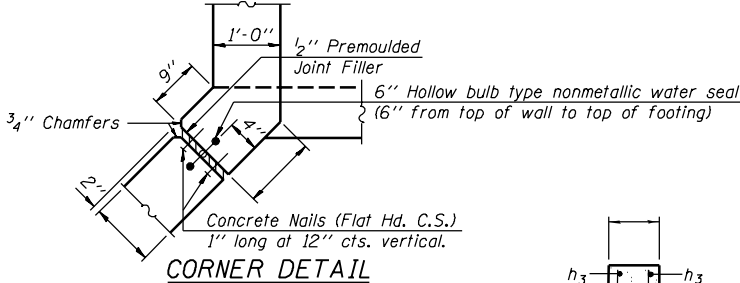
Contract #



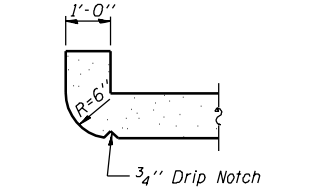
SECTION THRU BARREL

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1				
a2		#4		
d		#4	5'-6"	
h				
h1				
h2				
h3		#4		
h4		#6		
n(E)				
n1(E)				
t				
v				
v1				
v2				
v3				
v4				
v5				
v6				
v7				
w		#5		
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars, Epoxy Coated			Pound	
Reinforcement Bars			Pound	



CORNER DETAIL



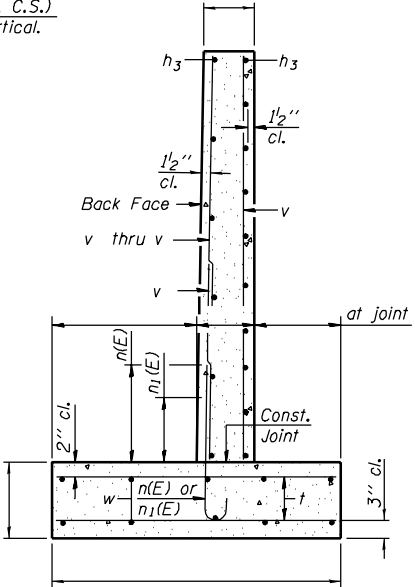
SECTION THRU HEADWALL
(Up Stream End Only)

DESIGN STRESSES

$f_y = 60,000 \text{ psi}$
 $f'_c = 3,500 \text{ psi}$

Max. Soil Pressure
under footing = psf

LOADING HS 20-44 & ALT.



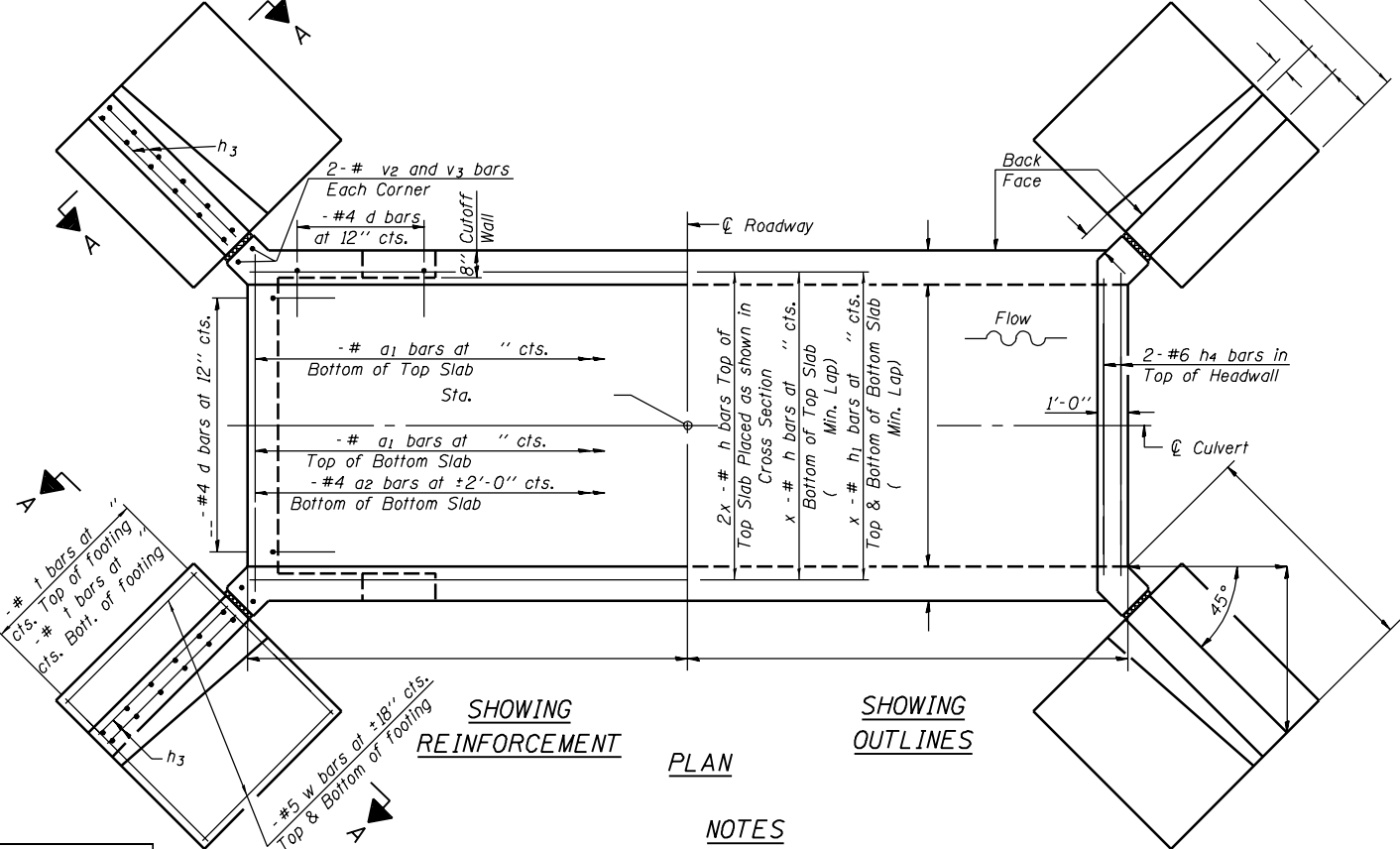
SECTION A-A

REINFORCING - BACK FACE

HALF LONG. SECTION

HALF ELEVATION

REINFORCING - FRONT FACE



SHOWING REINFORCEMENT

SHOWING OUTLINES

PLAN

NOTES

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.
Reinforcement bars designated (E) shall be epoxy coated.
All construction joints shall be bonded.

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

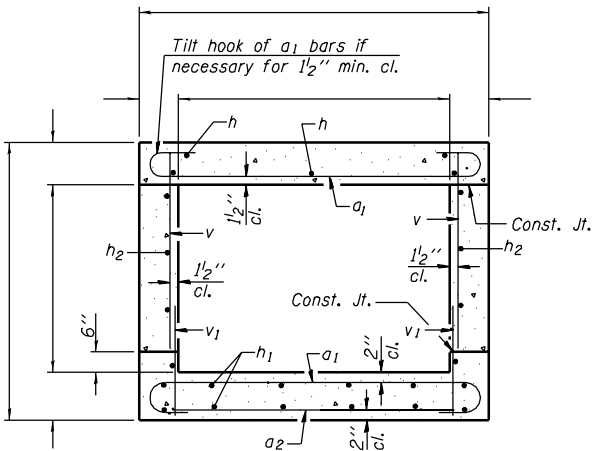
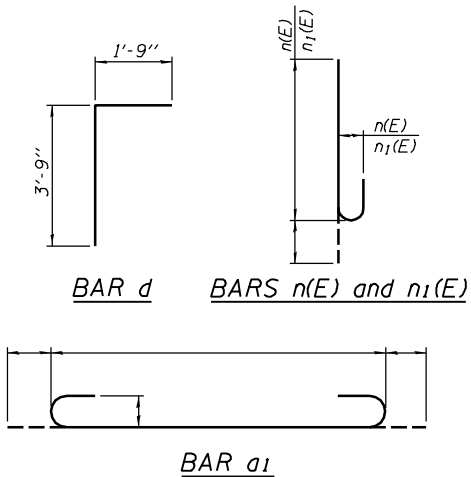
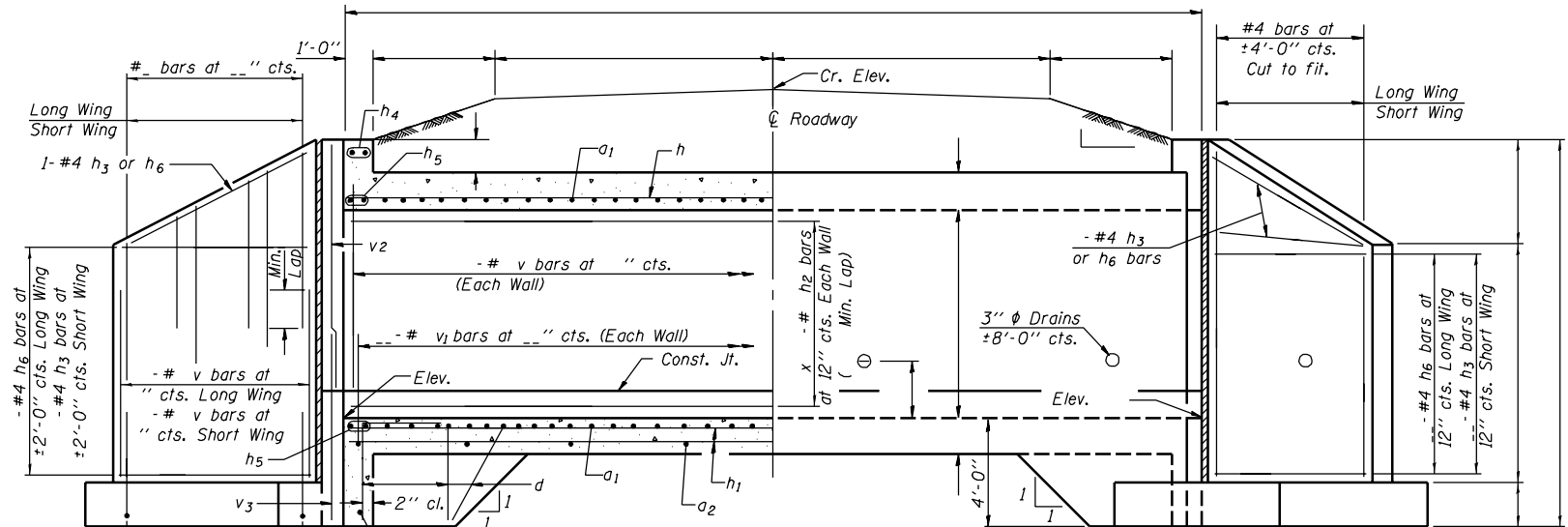
EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. -
- SHEETS

Contract #

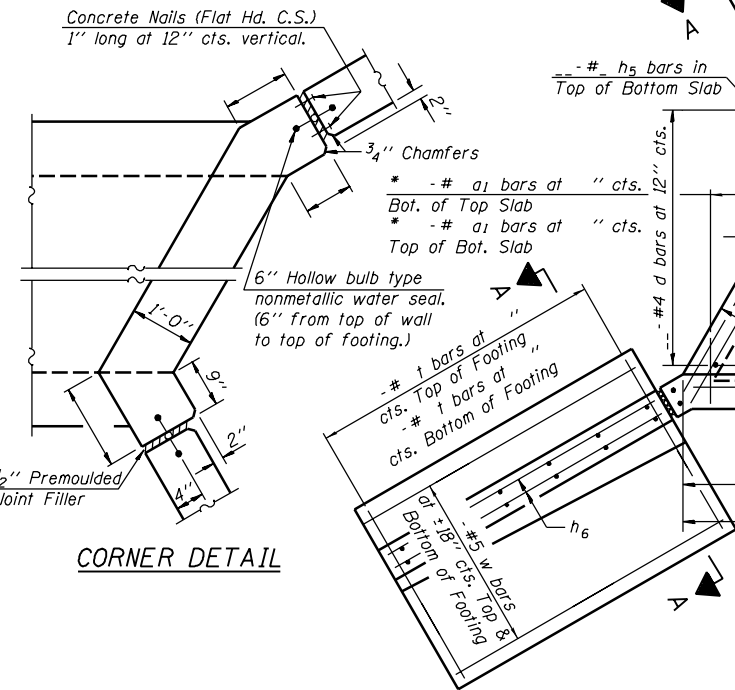


SECTION THRU BARREL

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1				
a2	#4			
d	#4	5'-6"		
h				
h1				
h2				
h3	#4			
h4	#6			
h5				
h6	#4			
n(E)				
n1(E)				
t				
v				
v1				
v2				
v3				
v4				
v5				
v6				
vr				
w	#5			
w1	#5			
Concrete Box Culverts			Cu. Yd.	
Reinforcement Bars			Pound	
Epoxy Coated			Pound	
Reinforcement Bars			Pound	

REINF.-BACK FACE



CORNER DETAIL

SHOWING REINFORCEMENT

PLAN

SHOWING OUTLINES

SECTION THRU HEADWALL (Up Stream End Only)

SECTION A-A

NOTES

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.
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DESIGN STRESSES

$f_y = 60,000$ psi
 $f'_c = 3,500$ psi

Max. Soil Pressure
under footing = psf

LOADING HS 20-44 & ALT.

DESIGNED -	200
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

SSB-T2-R

10-22-04